

A NEW SPECIES OF RUDBECKIA (ASTERACEAE-HELIANTHEAE)  
FROM HILLSIDE BOGS IN EAST TEXAS

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The section Macroline of the genus Rudbeckia is distinguished from the section Rudbeckia by the presence of lemon-yellow or pale yellow rays, somewhat compressed and basilaterally attached achenes that are slightly (if at all) shorter than the chaff, large often elongating flower heads, and a basic chromosome number of  $X = 18$  (Cronquist 1980). Recent field work and a study of herbarium specimens has revealed the following new species in section Macroline from acid hillside bogs in Angelina, Jasper, and Newton Counties, Texas.

RUDBECKIA SCABRIFOLIA Larry E. Brown, sp. nov. Fig. 1.

A R. maxima Nutt. similis sed differt capitulis parvioribus non elongescentibus et ligulis parvioribus et inflorescentia ramificatione et laminis foliorum scabris non glaucis nitentibusque.

Erect perennial herbs to 2 meters tall. Roots fibrous, arising from a 0.8-2.0 cm thick rootstock. Fresh stems somewhat glaucous. Stems terete, striate, and glabrous; upper peduncles often with a few scattered hairs. Basal leaves large; petioles to 28 cm long; blades oval, or ovate, 7.3-16.7 cm wide and 9.4-23.5 cm long. Leaf margins entire to undulate. Blade base subtruncate to broadly cuneate, blade tissue decurrent 1-3 cm down petiole as a narrow wing. Principal lateral veins numerous and arcuate, arising from a prominent midrib vein. Lower cauline blades similar but smaller. Blades of mid-cauline leaves elliptic, to 13 cm long, often winged to base by blade tissue. Upper leaves sessile, auriculate, elliptic to oblong, often contracted above middle to a more narrow apex. Extreme upper leaves more or less bract-like. Blade surfaces not glaucous as in R. maxima but lustrous and scabrous-pubescent with erect, reclining, or sometimes appressed 0.1-1.2 mm long hairs. Flower heads 3-11 in a branched inflorescence, rarely (if ever) a single monocephalous head as found in R. maxima. Discs hemispherical to ovate, not elongating, 1.5-2 cm wide and 1.1-2.5 cm long. Receptacle columnar to 1 cm long. Ligules pale yellow, reflexed, 1-3.3 cm long and 3.5-9 mm wide, abaxial surface hirsute with glandular and non-glandular hairs, adaxial surface glabrous. Phyllaries spreading to reflexed, ciliate and pubescent abaxially. Chaff to 6 mm long, partially enfolding ovary and achene, pale or yellowish hairs on the flat

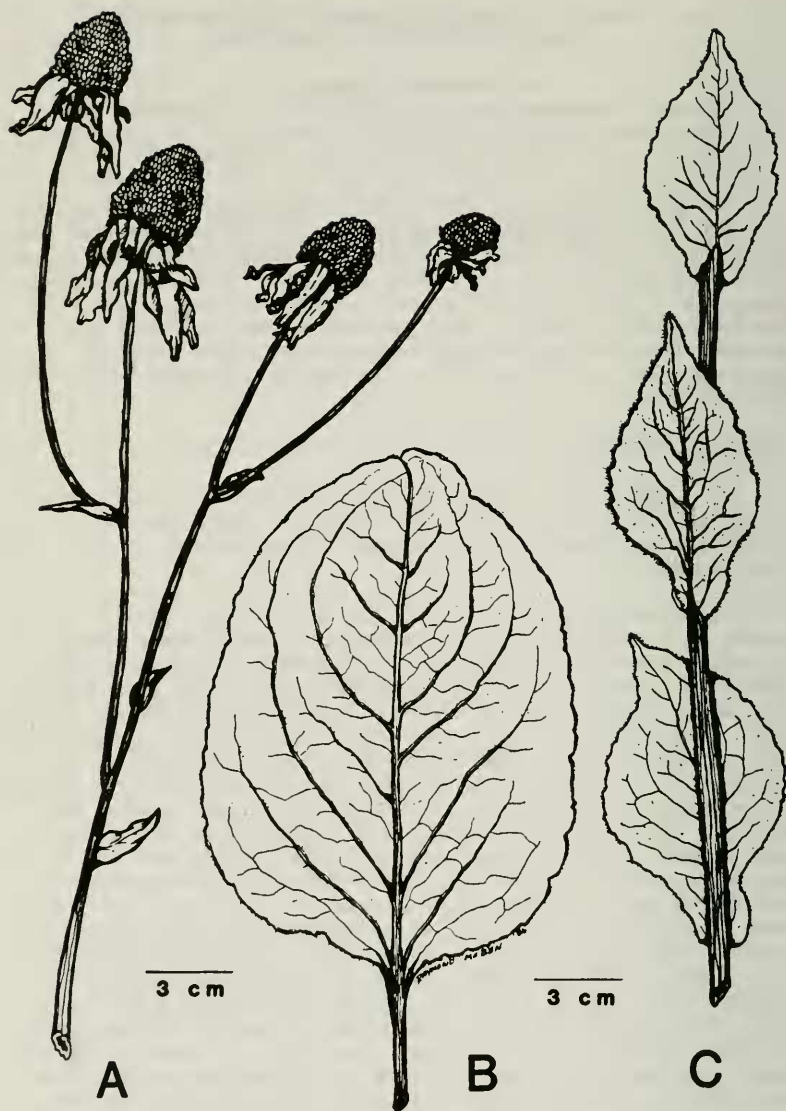


Fig. 1. *Rudbeckia scabrifolia* (from holotype).  
A, inflorescence; B, basal leaf; C, upper culm leaves.

apex with hairs extending a short distance down the abaxial keel, a purple line on the margins with the purple line of the abaxial keel somewhat expanded at the acute chaff apex. Corolla tube of disk flowers to 4.9 mm long, brown with 5 purple lines terminating at the sinuses of the 5 erect corolla lobes. Corolla lobes to 0.9 mm long, purple at tips. Achenes purple, glabrous, 3-4 mm long, 4-angled, somewhat compressed, acute at base and basilaterally attached to receptacle. Pappus an irregularly toothed or lacerate crown, 1.1-2 mm long. On mature flower heads the pappus extends to, or almost to, the apex of chaff. Flowering mostly in June but perhaps again in the fall as Brown 4646 (ASTC) collected on 22 September 1979 has a number of immature flower heads.

TYPE: UNITED STATES. TEXAS. ANGELINA COUNTY: ca 1 mi S of junction FR 339 and Fr 330 on 330, SW facing seepage slope with some pitcher plants present, 17 Jul 1980, John R. Ward 352 (holotype, ASTC, two sheets). This site is now in the Upland Island Wilderness of the Angelina National Forest.

Additional Collections Examined: ANGELINA CO: bog SE of Zavalla on U.S. highway 63, 0.5 mile NW of the Angelina-Jasper Co. line, 27 June 1978, K. L. Marietta 321 (ASTC); proposed Graham Creek Wilderness area, 8.8 mi S of Zavalla on U.S. 69 left on FR 314, 22 Sept 1979, Nixon & Ward 9790 (ASTC); hillside bog with pitcher plants below highway 63 at first guardrail S of intersection with FR 327, 16 Aug 1986, Brown 10656 (SBSC); same site, 19 Aug 1985, Brown 9405 (SMU). JASPER CO.: pitcher plant bog area associated with creek, 3 mi S of Letney, 6 Aug 1976, Nixon et al. 7296 (ASTC); Boykin Springs, Angelina National Forest, July 1964, D. J. Banks s.n. (ASTC); on seepage slope, Boykin Springs, Angelina National Forest, 6 June 1963, Correll & Wasshausen 27533 (LL); proposed Graham Creek Wilderness area, ca 0.3 mi N of intersection FR 314 & 330 on 330, seepage slope with pitcher plants, 17 June 1980, Ward 539 (ASTC); same site, 16 Aug 1986, Brown 10652 (SBSC, SMU, VDB); same site, 2 Aug 1986, Brown 10594 (TAES, NY). NEWTON CO.: pitcher plant bog 9 mi N of Wiergate on Hwy 87, then 2.5 mi E of Walker Cemetery in vicinity of Mill & Copperas Creeks, 24 July 1973, Nixon & Cox 6103 (ASTC).

Rudbeckia scabrifolia most closely resembles R. maxima Nutt.; however, the author has observed no plants intermediate between R. scabrifolia and R. maxima. Plants referable to R. maxima have not been observed by the author in those counties where R. scabrifolia is found. Table 1 is a list of some of the major differences between these two species. R. scabrifolia is a distinct species that is adapted to a unique environment which is present as scattered small patches on some east Texas hillsides.

Table I. A Comparison of R. scabrifolia and R. maxima

FEATURE	<u>R. scabrifolia</u>	<u>R. maxima</u>
Fresh stems	glaucous	glaucous
Blade surface	non-glaucous, shining, and scabrous-pubescent	glaucous, dull, and glabrous
Basal blade shape	mostly oval to 16 cm broad	mostly elliptic to 13 cm broad
Basal blade base	more or less truncate or abruptly contracted	gradually narrowed
Inflorescence	branched with 3-11 heads	often monocephalous
Discs of flower heads	to 2.5 cm long	to 8 cm long
Habitat	acid hillside bogs	dry to moist sites, often roadsides

At present, herbarium specimens of R. scabrifolia are available from two sites in Angelina Co., three sites in Jasper Co., and one site in Newton Co. Most, if not all, of these sites are pitcher plant bogs present on hillside seepage areas. A recent study (Nixon & Ward 1986) indicates these bogs develop on sandy uplands that are underlain by impermeable layers of clay materials. Water percolates downward through the sandy soils to the clay region and then moves laterally to emerge on the lower hill slope. In two bogs examined by the author, flowering stems of R. scabrifolia are common and conspicuous in the wet and mucky soils of the open center of the bog. Around the bog edge, where the soils are drier, flowering stems are absent or rare but plants with basal leaves only are common.

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